

WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

a first circuit block including a first power supply terminal and a first ground terminal, a first power supply voltage being applied between the first power supply terminal and the first ground terminal from a first power domain;

a second circuit block including a second power supply terminal and a second ground terminal, a second power supply voltage being applied between the second power supply terminal and the second ground terminal from a second power domain, at least one of the second power supply terminal and the second ground terminal being provided independently of one of the first power supply terminal and the first ground terminal; and

a propagation circuit provided between an output terminal of the first circuit block and an input terminal of the second circuit block to propagate a signal,

wherein:

at least the second circuit block includes a plurality of elements having an equal input withstanding voltage;

the first circuit block includes a plurality of elements whose withstanding voltage is equal to or lower than that of the elements of the second circuit block; and

a signal input element connected to the input terminal of the second circuit block to which the signal is input through the propagation circuit has an input withstanding voltage which is higher than that of other elements of the second circuit block.

2. The semiconductor device according to claim 1, wherein the propagation circuit is a signal line which makes a short circuit between the output terminal of the first circuit block and the input terminal of the second circuit block.

3. The semiconductor device according to claim 1, wherein the elements of the second circuit block are a plurality of MOS transistors.

4. The semiconductor device according to claim 3, wherein a gate oxide of a MOS transistor that forms a signal input element is thicker than that of another MOS transistor that forms another element.

5. The semiconductor device according to claim 1, wherein the first power supply voltage and the second power supply voltage are equal to each other.

6. The semiconductor device according to claim 1, wherein the first power supply voltage and the second power supply voltage differ from each other.

7. The semiconductor device according to claim 1, further comprising an electrostatic discharge protection circuit connected to the first and second power supply terminals and the first and second ground

terminals.

8. A semiconductor device comprising:

5 a first circuit block including a first power supply terminal and a first ground terminal, a first power supply voltage being applied between the first power supply terminal and the first ground terminal from a first power domain;

10 a second circuit block including a second power supply terminal and a second ground terminal, a second power supply voltage being applied between the second power supply terminal and the second ground terminal from a second power domain, at least one of the second power supply terminal and the second ground terminal being provided independently of one of the first power supply terminal and the first ground terminal; and

15 a propagation circuit provided between an output terminal of the first circuit block and an input terminal of the second circuit block to propagate a signal,

20 wherein:

the propagation circuit includes a resistive element connected between the output terminal of the first circuit block and the input terminal of the second circuit block.

25 9. The semiconductor device according to claim 8, wherein the propagation circuit is a signal line which connects a first semiconductor region which forms

a first PN junction in the first circuit block and
a second semiconductor region which forms a second PN
junction in the second circuit block.

10. The semiconductor device according to claim 8,
5 wherein the first circuit block and the second circuit
block are each made up of a plurality of elements
having an equal input withstanding voltage.

11. The semiconductor device according to
claim 10, wherein the elements of each of the first and
10 second circuit blocks are a plurality of metal oxide
semiconductor transistors.

12. The semiconductor device according to
claim 11, further comprising:

a first semiconductor region in which a first PN
15 junction is formed by a parasitic PN junction of
a given one of the MOS transistors of the first circuit
block; and

a second semiconductor region in which a second PN
junction is formed by a parasitic PN junction of
20 a given one of the MOS transistors of the second
circuit block.

13. The semiconductor device according to
claim 11, wherein at least one of the MOS transistors
of the first circuit block, to which such an excessive
25 voltage as to break the MOS transistors by
electrostatic discharge is applied, has a gate
breakdown voltage that is higher than that of other MOS

transistors which make up the first circuit block, or at least one of the MOS transistors of the second circuit block, to which such an excessive voltage as to break the MOS transistors by electrostatic discharge is applied, has a gate breakdown voltage that is higher than that of other MOS transistors which make up the second circuit block.

14. The semiconductor device according to claim 11, wherein some of the MOS transistors of the first circuit block, which make up an output circuit of the signal, have a gate breakdown voltage that is higher than that of others of the MOS transistors of the first circuit block.

15. The semiconductor device according to claim 8, wherein the first power supply voltage and the second power supply voltage are equal to each other.

16. The semiconductor device according to claim 8, wherein the first power supply voltage and the second power supply voltage differ from each other.

20 17. The semiconductor device according to claim 8, further comprising an electrostatic discharge protection circuit connected to the first and second power supply terminals and the first and second ground terminals.

25 18. A semiconductor device comprising:

a first circuit block including a first power supply terminal and a first ground terminal, a first

power supply voltage being applied between the first power supply terminal and the first ground terminal from a first power domain;

5 a second circuit block including a second power supply terminal and a second ground terminal, a second power supply voltage being applied between the second power supply terminal and the second ground terminal from a second power domain, at least one of the second power supply terminal and the second ground terminal
10 being provided independently of one of the first power supply terminal and the first ground terminal; and

a propagation circuit provided between an output terminal of the first circuit block and an input terminal of the second circuit block to propagate a
15 signal,

wherein:

the first and second circuit blocks are each made up of a plurality of elements having an equal input withstanding voltage; and

20 at least one of the elements of the first circuit block, to which such an excessive voltage as to break the elements by electrostatic discharge is applied, has an input withstanding voltage that is higher than that of other elements which make up the first circuit block,
25 or at least one of the elements of the second circuit block, to which such an excessive voltage as to break the elements by electrostatic discharge is applied, has

an input withstanding voltage that is higher than that of other elements which make up the second circuit block.

19. The semiconductor device according to
5 claim 18, wherein the propagation circuit is a signal line which connects a first semiconductor region which forms a first PN junction in the first circuit block and a second semiconductor region which forms a second PN junction in the second circuit block.

10 20. The semiconductor device according to claim 19, wherein the propagation circuit includes a resistive element connected between the first semiconductor region and the second semiconductor region.

15 21. The semiconductor device according to claim 18, wherein the elements of each of the first and second circuit blocks are a plurality of MOS transistors.

20 22. The semiconductor device according to claim 21, further comprising:

a first semiconductor region in which a first PN junction is formed by a parasitic PN junction of a given one of the MOS transistors of the first circuit block; and

25 a second semiconductor region in which a second PN junction is formed by a parasitic PN junction of a given one of the MOS transistors of the second

circuit block.

23. The semiconductor device according to
claim 18, wherein the first power supply voltage and
the second power supply voltage are equal to each
other.

24. The semiconductor device according to
claim 18, wherein the first power supply voltage and
the second power supply voltage differ from each other.

25. The semiconductor device according to
claim 18, further comprising an electrostatic discharge
protection circuit connected to the first and second
power supply terminals and the first and second ground
terminals.